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Education as a factor of income differentiation of the population in Latvia within the period from 2000 to 2011

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Abstract

The tendencies of income change and income differentiation levels, as well as the impact of education on income differentiation of the population in Latvia within the period from 2000 to 2011 are determined in the present article with the use of the regressive analysis.

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Keywords: income, income differentiation, education

1. Introduction

A high level of income differentiation contributes to the increase of poverty, as well as decreases the benefits of economic growth for poor families as due to the large initial inequality the poor get smaller share from benefits. Consequently, without reference to the level of income in a country, wide income differentiation has a direct negative impact on social welfare. Thus the research of income and its differentiation has been of great importance at state, as well as regional level.

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2. Methodology and Research Methods

Factors of income differentiation that have influence at micro level are explained by the theory of human capital, theory of filter or economic theory of signalling, as well as they have probable character that forms under the influence of occasional causes.

One of the researchers of the human capital theory was Theodore Schulz. He wrote: „one of the forms of the capital is education, human it is called because this form becomes a part of the human and capital it becomes as a result of being a source of future satisfactions or future profits, or both together” (Schulz T., 1960),

J.Mincer (Mincer J., 1994) believes that relation between the profit and education is not constant during the life time of the employee. In total approximately 25% of income inequality are due to the differences in education. The importance of production experience makes up approximately the same share. One more important factor that is included into analysis is the number of working days per year. By the impact of these three variables – education, experience and the number of working days – J.Mincer explains 60% of all differences of the level of labour income. The researcher R.Eckaus (Eckaus R.S., 1969).

The model introduced by G.Becker (Becker G., 1975) explains the inequality of income not only due to the labour (in fact – human capital), but also possessions. Return on investments in a person in average are higher than return on physical capital. But in the case with human capital it decreases with the growth of investments, when in the case of other assets (real estate, securities, etc.) decreases little or does not change at all.

However, education should not necessarily be interpreted as independent variable. The level of educational background depends largely on natural skills of the person and conditions of his or her upbringing in a family. Education, consequently, can be only as a mediator and not as a principal cause for higher income.

The researches of P.Taubman (Taubman P., 1978) using the samples of twins show that 45% of income differences are due to the genetic potential, 12% due to the social origin, and due to education – only 6%. R.Herrnstein (Herrnstein R. J., 1971) proves that if social privileges were removed, there would be a new for of elite – biological elite.

Other researchers (A.Spence (Spence A., 1974), K.Arrow (Arrow K., 1973), A.Berg, J.Stiglitz) interpret education as a mean of selection, some kind of filter that sorts students.

However, there is an opposite point of view: the place of the worker in income hierarchy is conditioned by his or her social origin that is measured by the indicators of family income, the level of education of parents, the professional status of the head of the family etc., as well as it is explained with the transfer of moral values, motivations and behaviour stereotypes from generation to generation. Education here plays a role of a mediator, modifying inequality in social origin into income inequality.

K.Jencks (K. Дженкс, 1997) believes that income determination process has probable character and is formed under the influence of occasional causes: correlation between education and income is found only for aggregate group values, as in the analysis of individual data the correlation practically disappears. In addition, according to the evaluation, all factors that influence the level of income – origin, genetic potential, gender, age, colour of skin, education, occupation and others – are able to explain not more than 22% of all differences of income. Hereof the conclusion can be drawn that income depends mainly on the number of occasional causes – „luck”, „fortune” of the person.

It is necessary to note that education significantly influences the income of the individual, however the fact that education is the main determinant of income is insufficiently proved by the researchers. It is impossible to ignore both mental capacities, and characteristics of families. The quality of education is also important. Resources of family and personal potential of the individual change over time into certain qualities that are demanded on a labour market that leads to certain earnings.

For the research of the level and differentiation of income of the population the authors use several averages - an arithmetic average, structural averages - a median, and quintiles.

Herfindahl index is calculated according to the formula:

$$K_r = \sum_{i=1}^n d_i^2, \quad (1)$$

where d_i - the share of each population group in the total amount of population monetary income, $i=1,2,...,n$ – the number of groups (Литвинов, В.А.,1997)

The limits of values of Herfindahl index is from 0 to 1. At number of groups advancing to infinity Herfindahl index advances to 0. When there is only 1 group, the coefficient is equal to 1. Herfindahl index is indifferent to the line of theoretically possible uniform distribution. Herfindahl index takes inequality of distribution for an axiom, and its changes reflect the changes in the proportions between groups, i.e. in ratios of shares of separate groups in the total amount of the monetary income of the population. At the set (invariable) number of groups increase of Herfindahl index in the current period in comparison with the period, taken as a base, directly testifies to concentration increase, i.e. concentration of the monetary income is more increasing in hands of one group and, respectively, indirectly characterizes the degree of deviation of the actual distribution of the income on groups of the population from the line of their theoretically possible uniform distribution (Литвинов В.А., 1999).

For the analysis of influence of the factors of differentiation of the population the regression analysis is also used in the present research.

3. Results

The empirical base of the research is the questionnaires of the population of Latvia carried out by SKDS firm within reports of the University of Latvia on economic development of Latvia for 2000, 2005, 2007, 2008 and 2011, and also questionnaire of the population "Social inequality III", carried out by the Institute of philosophy and sociology of the University of Latvia in 2009.

In the article for the study of income of families the indicator of the monetary income after payment of taxes on one family member (including social transfers) is used.

Tendencies of income change of the population of Latvia.

During the research 2 tendencies took place: the tendency of increase in the average income of the population during the period since January 2000 till January 2008 (the average income increased by 222% at increase of inflation index during the similar period for 57,1%) and a tendency of reduction of the average income of the population during the period since January 2008 till 2011 (January) (the average income decreased by 22%, the inflation index during the similar period increased for 1,8 %) is established. (Table 1).

Table 1. Income of the Population of Latvia in Quintile Groups within the Period from 2000 to 2011, Lats per Month

Indicators	Year	In Latvia	Part of the population				
			First quintile group (20%)	Second quintile group (20%)	Third quintile group (20%)	Fourth quintile group (20%)	Fifth quintile group (20%)
Average income in lats	2000	66	17	36	52	69	161
	2005	106	35	67	90	128	232
	2007	151	62	95	126	183	308
	2008	213	78	128	164	225	446
	2009	202	76	125	163	221	443
	2011	166	58	104	147	190	332
Quintile points in lats	2000		1-28	29-44	45-60	61-83	84-2500
	2005		5-54	55-75	76-100	101-150	151-1000
	2007		0-80	81-100	101-150	155-200	205-800
	2008		0-114	115-149	150-199	200-291	292-3000
	2009		0-100	101-145	146-180	181-267	268-2000
	2011		0-85	86-126	127-160	161-220	221-900

Source: calculations of the authors in the SPSS program according to the questionnaire of the University of Latvia within the report on development of national economy for 2000, 2005, 2007, 2008, 2011 and questionnaire data of the University of Latvia "..." for 2009

The average income per one family member in Latvia in 2000 made 78% from the size of the minimum consumption basket (84 lats a month), in 2005 the average income per one family member was made even to the size of the minimum consumption basket and made 105 lats a month. During the period from 2006 to 2009 the average income per one family member considerably advanced the size of the minimum consumption basket (by 1,1-1,5 times), however in the winter of 2010-2011 returned to the level of 2005. As for the families where each member of a household has less than one set of the minimum consumption basket, than up to 2009 their quantity decreases: with 81% from all Latvian families in 2000 to 40% in 2009, however result of 2011 returned to quantity of households with consumption below the minimum basket on the level of 2005 and made 65%.

Thus, the tendency of increase in the average income of families during the period from 2000 to 2008 is stated, it is also possible to state a negative influence of crisis on the income of the population of Latvia. In 2008 and 2009 influence of crisis on the income of the Latvian households is expressed very poorly, most strongly the consequences of crisis were revealed in the winter of 2010-2011.

Tendencies of the change of income differentiation of the population of Latvia.

Analyzing the changes of the total income in quintile groups during the period from 2000 to 2011 (see table 2), it is established that the total income of the population of the first (poorest) quintile group fluctuates within 5-9% slowly, and the total income of the fifth (richest) quintile group slowly, but steadily decreases (from 47% to 40%). The dynamics of the change of the size of the total income of the second, third and fourth quintile groups is not unambiguous therefore it is impossible to judge the differentiation according to the total quintile income and it is necessary to apply other methods to establish the tendencies of the change of income differentiation of all population.

Table 2. The Share of the Income of the Population of Latvia in 20% Groups by Years, in Percentage

Group of the population	2000	2005	2007	2008	2009	2011
First (20%)	5	7	9	7	8	7
Second (20%)	10	14	12	9	11	12
Third (20%)	18	17	19	17	16	18
Fourth (20%)	19	21	20	25	23	23
Fifth (20%)	48	41	40	42	41	40
Total:	100	100	100	100	100	100

Source: calculations of the authors in the SPSS program according to the questionnaire of the University of Latvia within the report on development of national economy for 2000, 2005, 2007, 2008, 2011 and questionnaire data of the University of Latvia "... " for 2009

Table 3. Herfindahl Index

	2000	2005	2007	2008	2009	2011
Herfindahl index	0,31	0,27	0,26	0,28	0,27	0,27

Source: calculations of the authors in the SPSS program according to the questionnaire of the University of Latvia within the report on development of national economy for 2000 and questionnaire data of the University of Latvia "... " for 2009

Thus, it is established that the influence of crisis up to 2011 did not change the established tendency of reduction of income differentiation of the population of Latvia, and caused only small short-term increase in income inequality. However it has socially acceptable character in Latvia within the EU .

The assessment of education as a factor of income differentiation of the population.

As a result, the authors conducted regression analysis revealed the presence of a linear relationship between income per household member and education.

Table 4. Linear Regression Coefficients for the Year 2000

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constan)	11,607	13,483		,861	,390
	education	25,834	6,190	,135	4,174	,000

Note: a Dependent Variable: income of one member of the family per month in lats

Predictors: (Constant), education

Source: calculations of the authors in the SPSS program according to the questionnaire of the University of Latvia within the report on development of national economy for 2000

Conclusion The model is significant for 1% level since the value of F - criterion is equal to 17, and the corresponding significance value is almost equal to zero. Coefficient of regression are significant for 1% level (the exception makes only the last coefficient –importance at 5% level).

Having interpreted the results of the regression analysis, it is possible to draw the following conclusion: the increase of the number of years of training of one family member for 3 years leads to the increase of income in average for 28,5 lats a month

Having built the linear regression according to the data of 2007 for Latvia in whole, where a dependent variable is the population income per 1 member of a household, and independent variable is education of one of the family members (number of years of training).

Table 5. Linear Regression Coefficients for the Year 2007

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	80,492	11,880		6,775	,000
Education	33,996	5,435	,233	6,255	,000

Note: a Dependent Variable: income of one member of the family per month in lats

Predictors: (Constant), education

Source: calculations of the authors in the SPSS program according to the questionnaire of the University of Latvia for 2009

The model is significant at 1% level since the value of F – criterion is equal to 39, and the corresponding significance value is almost equal to zero. Regression coefficients are significant at 1% level. Having interpreted the results of the regression analysis, it is possible to draw the following conclusions:

- the increase in number of years of training of one of the family members for 3 years leads to the increase of income in average for 34 lats a month.

Having built the linear regression according to the data of 2009 for Latvia in whole (see the appendix) where dependent are the same variables, was established the following:

Table 6. Linear Regression Coefficients for the Year 2009

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	73,011	72,469		1,007	,319
education	54,235	26,999	,296	2,009	,051

Note: a Dependent Variable: income of one member of the family per month in lats

Predictors: (Constant), education.

Source: calculations of the authors in the SPSS program according to the questionnaire of the University of Latvia for 2009

Having interpreted the results of the regression analysis, it is possible to draw the following conclusion: increasing the number of years of education of the members of the family of one of the 3-year increases in average income per month 54 lats.

Table 7. Linear Regression Coefficients for the Year 2011

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	106,130	7,945		13,359	,000
	Education	23,670	2,776	,306	8,525	,000

a Dependent Variable: TIR_IEN

Note: a Dependent Variable: income of one member of the family per month in lats

Predictors: (Constant), number of years of training .

Source: calculations of the authors in the SPSS program according to the questionnaire of the University of Latvia «...»for 2011

The increase in the number of years of training of one of the family members for every year leads to the increase of income in average for 23,7 lats a month.

4. Conclusions and Recommendations

The tendency of the increase of the average income of families during the period since January, 2000 till January, 2008 is established: average income increased by 222% at the increase of the inflation index during the similar period for 57,1%.

The tendency of the reduction of the average income of the population during the period since January 2008 till 2011 is established: average income decreased by 22%, the inflation index during the similar period increased by 1,8%.

It is possible to state the negative influence of crisis on the average income of families in Latvia. In 2008 the influence of crisis is expressed very poorly, in 2009 - also, however consequences of crisis revealed themselves most strongly in the winter of 2010/2011.

It is established that despite insignificant fluctuations of the indicators characterizing differentiation of the population of Latvia, the influence of crisis did not change the established tendency of reduction of income differentiation of the population of Latvia since 2000.

If the influence education factor on average income a month per 1 family member in dynamics from 2000 to 2009 crisis year is analysed, it is possible to state the increase of education aspect influence.

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